DATE: Lec2 SUBJECT: د/ محمد طلعت

Introduction to Simulink.

▪ analysing

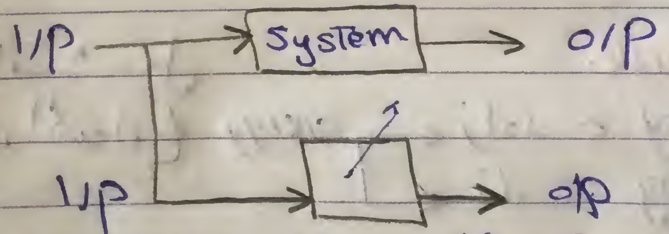
closed loop → it still open loop untill we start to enhance it at this time we say it is closed loop.

physical meaning of stability ⇒ all system are stable

stability → it appear when there are outside parameter effect on the system.
↳ so we use stablity to protect the system From affecting be this parameters.

energ is related to stability
we need to reduce energy losses.

System → physical Body need to future predection
① charactristic « model, observation »
estimator depend on « adaptor « adapt itself and tell us the needed information »



2 في energy ((O/P)) نظام آخر مكافئ للأصلي حتى يساوي.

1. adap (A, B, C, D)
A ↳ أهم
D ↳ direct Transmission

2. estimator «All variable»

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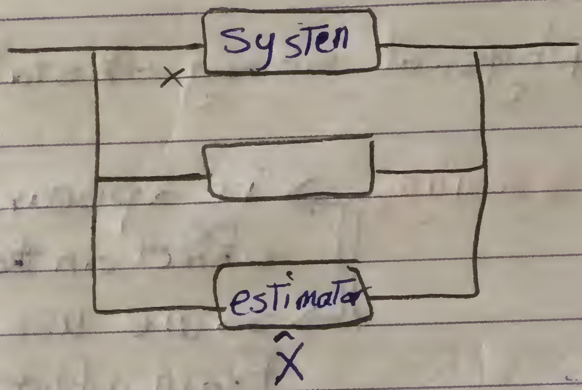
A → eign value of system ≅ poles
→ A matrix Can transfer into the diagonal matrix in this case.
→ the diagonal values is equal eignvalue.

ex $\dot{x} = Ax$

$SI\,X(s) - X(0) = A\,X(s)$

$(SI - A)\,X(s) = X(0)$



cheeK linearty

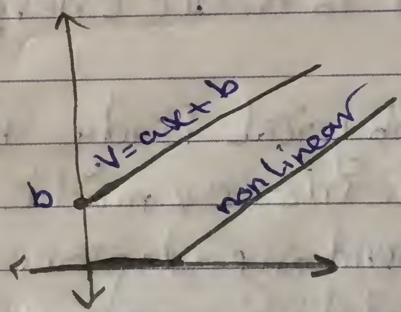
① ohm

نشوف هل يتحقق قانون أي لما تزود في الدخل يجب أن يكون الزيادة في الخرج بنفس المقدار

2. Super position

$V = ax + b$

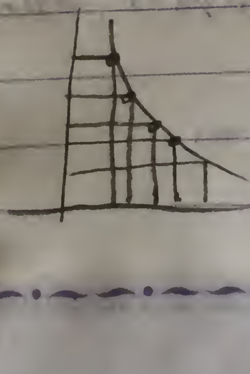
multi o/p في حالة تعرض النظام إلى
نحصل على ⇈
multi I/P



Charactristic Carve منحنى التشغيل

ومنه يمكن الحصول على energy

stability زادت ← energy
unstability قلت ←



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* The main objective of any system is to obtain eign value.

gordan form ⇒ all the uper 1 أو 0

eign value → diagonal → - stable
- at least 1 (+) unstable
- 0 only stable "critical"
- 2 0's unstable.

$$\begin{pmatrix} \dot{X}_1 \\ \dot{X}_2 \end{pmatrix} = \begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} X_1 \\ X_2 \end{pmatrix}$$

- $\dot{X}_1 = X_2 = Const$ $\frac{dX_1}{dt} = X_2 \Rightarrow X = t$
- $X_2 = 0$ all the time ثابته يتكامل طرفين

• اذا سبب مشاكل في المتغير بيشيل "1" من matrix

1- eign value.
2- eign vector eign value المناظر لكل

يجب مراعاتها عند دراسه 0 ⇒ independency

System Can be invertable if parameters "eign value" non Zero

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B

"Controllable or not controllable"

Controllable ⇒ i/p أدخل ← تعطي o/p له مقابله نتيجه

is the ability of the i/p to change the state of variable from one point to another in a specific time.